

RANGELAND MONITORING PROTOCOL

1. **Minimum Monitoring Standards.** The minimum monitoring standards found in Wyoming Rangeland Monitoring Handbook, 4423-1.1 through .15, Release 4-7 dated 6/6/88 are rescinded and replaced with the following:

a. **Monitoring Methods** - The methods described in the Interagency Technical References 1730 series AUtilization and Residue Measurement,@ASampling Vegetation Attributes,@ and AMeasuring and Monitoring Plant Populations@ describe the overall monitoring methods to be used. These references describe when, where, and how rangeland studies will be conducted, as well as the types of data to be collected.

All monitoring will be done using an interdisciplinary (ID) team approach. Field Managers will determine the level of ID team involvement by deciding what resource disciplines are needed on the team.

In many cases, indicators of healthy rangelands relating to soils and vegetation can be evaluated using the existing monitoring studies that are currently in place. New studies must be designed to monitor the indicators identified in the Wyoming Standards for Rangeland Health, and also be able to monitor site specific objectives.

b. **Monitoring Intensity** - The intensity or level of monitoring will depend upon (1) resource issues whether driven by public interest and/or values at risk (i.e., T&E species, impaired water, etc.) and (2) staff availability and funding.

Regardless of the monitoring intensity, data collected for previous plans and evaluations (i.e., RMPs, NEPA documents) or during rangeland health standard assessments may be helpful in determining the intensity and protocol to be used. The protocol for either high intensity or low intensity monitoring will be determined by the staff, approved by the Field Manager, and documented in the Field Office monitoring plan.

(1) **High intensity monitoring** - High intensity monitoring normally includes actual use, utilization, and climate. Trend is also highly recommended. However, monitoring and evaluation methods from other sources, field observations, and other data acceptable to the authorized officer may also be used. High intensity monitoring efforts should clearly track from broader land use planning goals to site specific objectives that can be evaluated as shown in the following example:

Attachment 1 (8 pp)

Land Use Planning Goal	Issues	Site Specific Objectives	Management Action	Monitoring Plan
Ensure that upland vegetation on each ecological site consist of plant communities that are resilient, diverse, and able to recover from natural and human disturbance. (Standard 3)	Based on comparison of baseline data to a reference site and NRCS Technical Site Guides, the frequency and cover of needle and thread is below potential for the site.	Increase the basal cover of needle and thread from 2 % to at least 10% at key area 1 within 6 years.	Change turnout date from May 1 each year to June 15 each year. Alternate turnout pasture each year so that an individual pasture receives June grazing no more than 1 in three years.	Monitor utilization on needle and thread at key area 1 each year. Permittee will submit actual use by pasture Field office precipitation monitoring Read nested frequency and basal cover transects in 2008.

This data will help determine the effects of management actions on rangeland resources and provide data needed to enable the authorized officer to enter into various rangeland management agreements and/or issue decisions.

(2) Low intensity monitoring - Low intensity monitoring is intended to focus on areas where previous assessments, field observations, and evaluations have determined that a more intensive monitoring protocol is unnecessary. This level of monitoring is designed to detect undesirable changes which could prompt or warrant reevaluation of ongoing land uses. At a minimum, an inspection with photographs of the area every five years is desirable.

2. Livestock Grazing Evaluations. If an assessment of rangeland health standards indicates that one or more standards is not being met, due wholly or in part to livestock grazing practices, then a thorough grazing management evaluation is necessary. The purpose of the evaluation is to help determine which grazing guidelines will be used to address the fundamentals of rangeland health and to develop management actions for improving rangeland. In addition to standards assessments, requests for permit changes or renewals, allotment management plan evaluations, or other actions relating to grazing, usually require an evaluation of livestock grazing management practices in a management unit.

Although the level of detail will vary depending on the issues involved, a complete and thorough livestock grazing evaluation must address timing and duration of use, distribution, stocking levels and kind of animal. A rangeland health standards assessment and evaluation is also critical to the livestock grazing evaluation and should be completed concurrently.

It is important to remember that timing and duration of use, distribution, stocking levels, and the kind of grazing animal all interact to some degree. Failing to evaluate one or more of these parameters gives an incomplete picture of grazing management impacts on

rangelands. Utilization pattern mapping can reveal opportunities to improve distribution and also helps evaluate grazing intensity over an entire management unit.

3. **New Rangeland Methods.** Field offices are urged to keep abreast of new range monitoring techniques. The following is a list of some of the latest techniques.

a. **Monitoring Techniques**

(1) **Geographic Information Systems(GIS)** - GIS provides simple and easily understandable maps. It can also be valuable for illustrating opportunities to improve management to permittees and interested public.

Recent developments in GIS provide powerful tools to evaluate livestock grazing distribution and stocking levels. Expected use mapping (K.Guenther, Rangelands 22(2) April 2000) evaluates the relationship between slope and distance to water and helps predict grazing distribution. If production and/or range site mapping is available, suggested initial stocking levels can be modeled using this approach. Expected use and suggested initial stocking levels need to be supported by utilization pattern mapping and other field monitoring studies to be useful in making grazing management decisions.

(2) **The Grazing Response Index (GRI)** - The GRI, a newly developed methodology, helps evaluate timing and duration of use and stocking levels as they relate to grazing intensity. This tool helps to assess the effects of grazing during the current year and to aid in planning grazing for the following year (Reed, 1999). The Grazing Response Index: A Simple and Effective Method to Evaluate Grazing Impacts (Rangelands 21 (4) 3-8). Field testing of the GRI in Wyoming indicates it is an effective communication tool that help permittees, consultants, and agency employees focus on solutions to grazing issues.

(3) **Other Monitoring Methods** - Monitoring methods may have to be developed to address specific situations. Consultants, permittees or other interested public may also propose monitoring methods not described in agency manual guidance. In this regard, 43CFR 4100-5, ADefinitions of Rangeland Studies,@ provides the Field Manager discretion to decide whether to accept and employ alternative monitoring methods not described in BLM Manual guidance or Technical References.

Guidance for collection of monitoring data by Non-BLM sources provided by Instruction Memorandum No. WY-2000-18 is extended and incorporated herein (Appendix 2).

b. Assessment Techniques (Qualitative methods)

(1) Proper Functioning Condition (PFC) for Lentic Riparian and Wetland Areas. The method is predicated upon an interdisciplinary team approach. The makeup of the team is not critical, but at a minimum, should include a person capable of identifying riparian plant species and assessing plant community health, as well as a person capable or trained in assessing fluvial and geomorphic properties. **This should never be a single person, nor should it be done by non-professionals. The use of three people as a target number of ID team members insures that consensus can be reached.** The process for assessing and evaluating these areas can be found in Technical References 1734-11(1994) and 1734-16 (1999). This method, developed for assessing PFC of wetlands, is qualitative and is based on using a checklist to make a relatively quick determination of condition. As with the PFC checklist for streams, quantitative techniques support the lentic PFC checklist and should be used where answers are uncertain. PFC is an appropriate starting point for determining and prioritizing the type and location of quantitative inventory or monitoring necessary for specific checklist items.

(2) Interpreting Indicators of Rangeland Health, Technical Reference 1734-6. This process provides the land managers and resource specialist a tool for conducting initial assessments of soil and site stability, hydrologic function, and the integrity of the biotic community in the area of interest. **This technique is not to be used as a monitoring tool. This assessment process should not be used to determine cause and effect.** It serves to point out areas of concern and to help focus on areas where more intensive monitoring may be needed. It can be a very helpful tool in developing the monitoring protocol described in your monitoring plan.

4. Monitoring Plans. Each Field Office will use an interdisciplinary team to develop an overall multi-discipline monitoring plan which will guide the monitoring effort for that office. The overall monitoring strategy, while addressing the objectives for the area, needs to include which one or two indicators in each standard is best for monitoring long term rangeland health and the techniques or methods best suited to measure the indicators. As a guide, Appendix A, attached, provides a list by rangeland health standard those studies that may be used to monitor selected indicators. For greater detail of the elements of a monitoring plan, refer to Appendix C which has been taken from TR 4400-1 Planning for Monitoring, 1984, Section 7, and updated accordingly. However, Field Office monitoring plans should generally consider the following:

a. Discuss how monitoring fits into the overall rangeland management program by considering the capability of each office and bringing it forward into an implementation schedule showing frequency or time frame, and the staff specialist responsible for taking the action. Every effort should be made to integrate allotment evaluations, NEPA documents for grazing permit renewals, and rangeland health standards

determinations into a single evaluation. The monitoring schedule should ultimately set the priority for monitoring for every management unit (allotment, watershed, etc.) in the planning area.

b. Clearly reference manuals, policies, instruction memoranda, and Technical References that explain when, where, and how studies will be conducted. It is extremely important that the methods employed embrace an approach that will measure multiple resource values (i.e., watershed, wildlife habitat, T&E species, etc.). Avoid as much as possible, techniques that measure single resource components or values.

c. Discuss the criteria for the selection of a key (reference area) area, key species, and indicators of rangeland health. Technical Reference, TR 1730-1, Measuring and Monitoring Plant Populations, can be helpful in determining a sample design.

d. Discuss the intensity of monitoring given normally encountered situations (Refer to Monitoring Intensity, paragraph 1b (1) and (2) above). For example, if field observations indicate a winter use, M category allotment is meeting Standards for Healthy Rangelands, the Aon-the-ground® situation will usually be documented using a qualitative assessment procedure and field notes. This information will be used in the NEPA analysis to determine whether or not the grazing permit should be renewed with the existing terms and conditions, or if field observations indicate an allotment might not be meeting standards for healthy rangelands or that conflicts with land use planning requirements are occurring then more intensive monitoring efforts will usually be required.

e. Develop a realistic schedule that assesses the personnel needed to implement the monitoring program. Interdisciplinary coordination and involvement by permittees, interested public, and other affected parties is important to the success of your monitoring effort and is to be encouraged.

5. **Rangeland Studies.** The procedures for Actual Use, Utilization, and Trend and Climatological Studies are as follows:

a. Actual Use Studies - The procedure out lined in the current Wyoming Monitoring Handbook, H-4423-1.3 is an excellent reference for documenting Aactual use® and should continue to be used.

b. Utilization Studies - Wyoming Rangeland Monitoring Handbook procedures in 4423-1.4, AUtilization Studies,® will be rescinded and retained for historical reference only. The procedures outlined in Technical Reference 1734-3, Utilization Studies and Residual Measurements, will be used for conducting utilization studies and residual measurements.

c. **Trend Studies** - Although the Wyoming Rangeland Monitoring Handbook procedures in 4423-1.5, **Trend Studies**,[@] is rescinded and retained only for historical reference, the Field Manager still has the discretion to use those methods. In addition, Field offices may need to continue the Wyoming Permanent Plot trend studies to properly evaluate rangeland condition/trend on those allotments where they have been established. The decision to use this method will be documented in the Field Office monitoring plan. Otherwise, the procedures in the Technical Reference 1734-4, Sampling Vegetation Attributes, will be used for conducting trend studies.

d. **Climatological Studies** - The climatological studies identified in the Wyoming Rangeland Monitoring Handbook procedures in 4423-1.6 **Climatological Studies**[@] will not be required and are discretionary for low priority areas or where low intensity monitoring has been conducted. However, they should be established and maintained for high priority areas and with high intensity monitoring. This guidance provides an excellent reference for conducting climatological studies and should be used whenever it is decided to set up any of the studies specified.

6. **Consultation**. Cooperation, coordination, and consultation with resource users, resource management agencies, academia, and other affected private and public interests are vital to the success of our monitoring program. Consultation must be initiated during preplanning and actively continued through the collection, evaluation, interpretation, and application of data. Appropriate measures must be undertaken to assure participation by a diversity of interests to equitably represent the affected resources and values. If possible, at least one year should be spent in user consultation, allotment reconnaissance, stratification, and locating key areas and study sites before data collection is started.

a. **Consultation Procedures**. Monitoring studies will follow a multi-discipline approach to avoid duplication of effort and allow maximum efficiency. This requires coordination and consultation with various interest groups on a continuing basis. The degree of involvement with a given group will vary considerably, depending upon the complexities and controversies surrounding any given watershed, allotment, or management unit.

b. **Monitoring Plan**. Each Field Manager shall prepare a monitoring plan (Refer to paragraph 4 above and Appendix C) that contains a minimum schedule of consultation required for all phases of the plan (determination of key areas, key plants, rangeland health indicators, study methods, fieldwork, etc.). In developing this schedule, the standard outline requirements of "who-what-when-where" should be considered. The following items should be considered in developing the consultation/cooperation/coordination section of the plan:

(1) In-House (Zoned/Field Office).

(a) Multi discipline concerns such as:

Wildlife
Wild horses
Watershed
Mineral development
T&E species (plant and animals)

(b) An interdisciplinary (ID) team. An ID team will prepare the monitoring plan(s) and identify data needs, relationships, etc. Example: Consider coordination needs with Operations/Surface Protection. Re: Protection of study sites/transects from obliteration or disturbance by surface disturbing activities.

(c) Adjoining Field Offices.

Assure consistency and continuity in methodology, procedures, intensity, etc.

State Office staff specialist are available to help resolve any differences.

(2) User Groups and/or Other Interested Publics.

(a) Range Users. This is most important. Range users must be included in all phases of monitoring (allotment stratification, study location, implementation, data gathering, data analysis; also actual use, weather, and climate factors). If the current permittee is not the owner of the base property, consider including the owner in consultation activity. Also consider a cooperative agreement if studies are to be conducted on private lands.

To promote operator/rancher involvement in rangeland monitoring , a handbook entitled Wyoming Rangeland Monitoring Guide has been developed in cooperation with the U.S. Forest Service, University of Wyoming Range Management Department through Cooperative Extension, and the State Department of Agriculture. The handbook contains a number of interagency approved monitoring methods that can be easily understood and applied. The use of this guide is encouraged for getting the permittee/lessee as well as others who have expressed an interest, actively involved in monitoring and the management of the allotment or area.

(b) Rancher Input. Personal visits to each operator must be arranged to ensure rancher input in a timely manner. This may require a flexible work schedule. These personal visits to the ranch to obtain information will improve the chance of collecting good information and improve BLM/rancher relations.

(c) State Land (Land Commission). Cooperative agreements or written permission may be required to include State owned lands in studies or to locate studies on these lands.

(d) Resource Advisory Councils. Reserved

(e) Others. As needed, consider consultation with other individuals/groups such as university of Wyoming range staff, county agents, NRCS technicians, Forest Service, Wyoming Game and Fish Department, representatives of environmental groups, congressional delegation representatives, and the public-at-large who have expressed a specific interest in the management of the public lands.

(3) Documentation and Recording. It is extremely important that all consultation coordination actions be documented, recorded, and permanently filed. These records will be vital in any subsequent controversies, hearings, or litigation.

**SUGGESTED MONITORING METHODS
FOR
STANDARDS FOR HEALTHY PUBLIC RANGELANDS**

All Rangeland Health Standard Conformance Reviews will be completed using an interdisciplinary team approach. The rangeland management specialist responsible for the administration of that allotment will be the interdisciplinary team lead. The interdisciplinary team may include rangeland management specialist, wildlife biologist, soil scientist, and hydrologist.

STANDARD #1

Within the potential of the ecological site (soil type, landform, climate, and geology), soils are stable and allow for water infiltration to provide for optimal plant growth and minimal surface runoff.

THIS MEANS THAT:

The hydrologic cycle will be supported by providing for water capture, storage, and sustained release. Adequate energy flow and nutrient cycling through the system will be achieved as optimal plant growth occurs. Plant communities are highly varied within Wyoming.

INDICATORS MAY INCLUDE BUT ARE NOT LIMITED TO:

- ! Water infiltration rates.
- ! Soil compaction.
- ! Erosion (rills, gullies, pedestals, capping).
- ! Soil micro-organisms.
- ! Vegetative cover (gully bottoms and slopes).
- ! Bare ground and litter.

The above indicators are applied as appropriate to the potential of the ecological site.

**MONITORING METHODS APPROPRIATE FOR GATHERING DATA USED
BUT NOT LIMITED TO EVALUATING INDICATORS FOR STANDARD #1**

- ! Permanent Trend Plots,
 - Quadrant/Nested Frequency.
 - Photo Points.
 - Line Intercept (Cover for shrubs).

Point Intercept.

Attachment 2 (6 pp)

- ! Apparent Trend.
- ! Point Intercept.
- ! Soil Surface Factors (SSF) as related to Erosion Condition Classification (Clark, 1980, BLM Technical Note #346).
- ! Infiltrometer studies.
- ! BLM Rangeland Health Assessment.
- ! Range Condition/Plant Composition & Diversity.
- ! Ecological Site Inventory.
- ! Interdisciplinary Professional Judgement.

STANDARD #2

Riparian and wetland vegetation has structural, age, and species diversity characteristic of the stage of channel succession and is resilient and capable of recovering from natural and human disturbance in order to provide forage and cover, capture sediment, dissipate energy, and provide for groundwater recharge.

THIS MEANS THAT:

Wyoming has highly varied riparian and wetland systems on public lands. These systems vary from large rivers to small streams and from springs to large wet meadows. These systems are in various stages of natural cycles and may also reflect other disturbance that is either localized or widespread throughout the watershed. Riparian vegetation captures sediments and associated materials, thus enhancing the nutrient cycle by capturing and utilizing nutrients that would otherwise move through a system unused.

INDICATORS MAY INCLUDE BUT ARE NOT LIMITED TO:

- ! Erosion and deposition rate.
- ! Channel morphology and floodplain function.
- ! Channel succession and erosion cycle.
- ! Vegetative cover.
- ! Plant composition and diversity (species, age class, structure, successional stages, desired plant community, etc.).
- ! Bank stability.
- ! Woody debris and instream cover.
- ! Bare ground and litter.

The above indicators are applied as appropriate to the potential of the ecological site.

**MONITORING METHODS APPROPRIATE FOR GATHERING DATA USED
BUT NOT LIMITED TO EVALUATING INDICATORS FOR STANDARD #2**

- ! Proper Functioning Condition (PFC).
- ! Greenline Data.
- ! Cross section Data.
- ! Photo Points.
- ! Ecological Site Inventory.
- ! Interdisciplinary Professional Judgement.

STANDARD #3

Upland vegetation on each ecological site consists of plant communities appropriate to the site which are resilient, diverse, and able to recover from natural and human disturbance.

THIS MEANS THAT:

In order to maintain desirable conditions and/or recover from disturbance within acceptable timeframes, plant communities must have the components present to support the nutrient cycle and adequate energy flow. Plants depend on nutrients in the soil and energy derived from sunlight. Nutrients stored in the soil are used over and over by plants, animals, and microorganisms. The amount of nutrients available and the speed with which they cycle among plants, animals, and the soil are fundamental components of rangeland health. The amount, timing, and distribution of energy captured through photosynthesis are fundamental to the function of rangeland ecosystems.

INDICATORS MAY INCLUDE BUT ARE NOT LIMITED TO:

- ! Vegetative cover.
- ! Plant composition and diversity (species, age class, structure, successional stages, desired plant community, etc.).
- ! Bare ground and litter.
- ! Erosion (rills, gullies, pedestals, capping).
- ! Water infiltration rates.

The above indicators are applied as appropriate to the potential of the ecological site.

**MONITORING MEHTODS APPROPRIATE FOR GATHERING DATA USED
BUT NOT LIMITED TO EVALUATING INDICATORS FOR STANDARD #3**

- ! Permanent Trend Plots,
 - Quadrant/Nested Frequency.
 - Photo Points.
 - Line Intercept (Cover for shrubs).
 - Point Intercept.
- ! Apparent Trend.
- ! Point Intercept.
- ! Soil Surface Factors (SSF) as related to Erosion Condition Classification (Clark, 1980, BLM Technical Note #346).
- ! BLM Rangeland Health Assessment.
- ! Range Condition/Plant Composition & Diversity.
- ! Ecological Site Inventory.
- ! Interdisciplinary Professional Judgement.

STANDARD #4

Rangelands are capable of sustaining viable populations and a diversity of native plant and animal species appropriate to the habitat. Habitats that support or could support threatened species, endangered species, species of special concern, or sensitive species will be maintained or enhanced.

THIS MEANS THAT:

The management of Wyoming rangelands will achieve or maintain adequate habitat conditions that support diverse plant and animal species. These may include listed threatened or endangered species (U.S. Fish and Wildlife-designated), species of special concern (BLM-designated), and other sensitive species (State of Wyoming-designated). The intent of this standard is to allow the listed species to recover and be delisted, and to avoid or prevent additional species becoming listed.

INDICATORS MAY INCLUDE BUT ARE NOT LIMITED TO:

- ! Noxious weeds.
- ! Species diversity.
- ! Age class distribution.
- ! All indicators associated with the upland and riparian standards.
- ! Population trends.
- ! Habitat fragmentation.

The above indicators are applied as appropriate to the potential of the ecological site.

MONITORING METHODS APPROPRIATE FOR GATHERING DATA USED BUT NOT LIMITED TO EVALUATING INDICATORS FOR STANDARD #4

- ! Wildlife data on big game crucial winter & summer ranges.
- ! Noxious Weed Inventories.
- ! T&E data from United States Fish and Wildlife Service.
- ! BLM Rangeland Health Assessment.
- ! Range Condition/Plant Composition & Diversity.
- ! Ecological Site Inventory.
- ! Interdisciplinary Professional Judgement.

STANDARD #5

Water quality meets State standards.

THIS MEANS THAT:

The State of Wyoming is authorized to administer the Clean Water Act. BLM management actions or use authorizations will comply with all Federal and State water quality laws, rules, and regulations to address water quality issues that originate on public lands. Provisions for the establishment of water quality standards are included in the Clean Water Act, as amended, and the Wyoming Environmental Quality Act, as amended. Regulations are found in Part 40 of the Code of Federal Regulations and in *Wyoming's Water Quality Rules and Regulations*. The latter regulations contain Quality Standards for Wyoming Surface Waters.

Natural processes and human actions influence the chemical, physical, and biological characteristics of water. Water quality varies from place to place with the seasons, the climate, and the kind substrate through which water moves. Therefore, the assessment of water quality takes these factors into account.

INDICATORS MAY INCLUDE BUT ARE NOT LIMITED TO:

- ! Chemical characteristics (e.g., pH, conductivity, dissolved oxygen).
- ! Physical characteristics (e.g., sediment, temperature, color).
- ! Biological characteristics (e.g., macro- and micro-invertebrates, fecal coliform, and plant and animal species).

MONITORING DATA USED BUT NOT LIMITED TO IN EVALUATING INDICATORS FOR STANDARD #5

! The Wyoming Department of Environmental Quality (WDEQ) is the responsible agency for the administering the Clean water Act (CWA) in Wyoming. This includes establishing designation of beneficial uses, making water quality impairment determinations, and establishing Total Maximum Daily Load Allocations (TMDL).

! Wyoming BLM will employ the following screening approach published in IM WY-98-061 during the assessment process:

- A. If WDEQ indicates a waterbody is impaired, this standard is not being met.
- B. If WDEQ has delisted the waterbody or indicates that no impairments exist, this standard is being met.
- C. In all other case, the status of this standard is to be considered UNKNOWN

It should be noted that IM WY-98-061 also provides flexibility to the Field Manager to gather qualitative water quality data per Wyoming's criteria for Credible Data using WDEQ approved methods.

STANDARD #6

Air quality meets State standards.

THIS MEANS THAT:

The State of Wyoming is authorized to administer the Clean Air Act. BLM management actions or use authorizations will comply with all Federal and State air quality laws, rules, regulations and standards. Provisions for the establishment of air quality standards are included in the Clean Air Act, as amended, and the Wyoming Environmental Quality Act, as amended. Regulations are found in Part 40 of the Code of Federal Regulations and in *Wyoming Air Quality Standards and Regulations*.

INDICATORS MAY INCLUDE BUT ARE NOT LIMITED TO:

- ! Particulate matter.
- ! Sulfur dioxide.
- ! Photochemical oxidants (ozone).
- ! Volatile organic compounds (hydrocarbons).
- ! Nitrogen oxides.
- ! Carbon monoxide.
- ! Odors.
- ! Visibility.

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In Reply Refer To:

4400 (930) P

January 20, 2000

Instruction Memorandum No. WY-2000-18
Expires 09/30/2001

To: Field Managers

From: Associate State Director

Subject: Collection of Renewable Resource Monitoring and Inventory Data by
Non-BLM Sources

There continues to be interest from ranchers and others to collect rangeland monitoring and inventory data on grazing allotments and other management areas. This Instruction Memorandum will extend State policy outlined in IM No. WY-99-1 dealing with requests from non-BLM sources (ranchers, environmental groups, interested publics, Universities, NRCS, the Ag Extension Service, State agencies or consultants) to collect this kind of data.

BLM does not have the work force to intensively monitor all management areas, so outside offers to help us with this workload should not be discouraged (outside help would be particularly valuable in identifying and monitoring noxious weed infestations). If BLM is to use outside help in monitoring, however, we must insure that the data is collected properly and we must be comfortable with using the data once it is collected. This means that we must provide a certain amount of cooperation and guidance to the person(s) collecting the data. The regulations provide that adjustments in grazing use or indicated changes in management be made when supported by "data acceptable to the authorized officer." The Field Manager is the authorized officer and so they must decide whether the data is acceptable. The Field Manager also must decide how much staff time can be dedicated to cooperation and guidance.

When a non-BLM party offers to monitor an allotment or management area, the following policy applies:

Every effort should be made to accommodate these requests, however, the Field Manager must decide whether the staff can devote the necessary time to cooperating in the effort.

If the Field Manager decides in the affirmative, an agreement with the person(s) or group(s) wanting to do the monitoring will be developed. The agreement will specify the problems/concerns that are being addressed, and the management goals and objectives for the area being monitored (baseline data may be collected without identifying management goals and objectives). From this, the BLM and the cooperators will determine the monitoring requirements, i.e., what methods will be followed, who will do the data collection, when the data will be collected, and where the data will be collected.

The agreement also should specify how much involvement the area staff will have, projected timetables, public involvement, and how the data will be evaluated.

The cooperator(s) should understand that the data will be used in the same way as data collected by the BLM. In other words, it will be considered with all other available data on the allotment or management area. If during the evaluation, all available data indicates a need for management changes, e.g., adjustments in grazing period of use or use levels (both increases or decreases in AUMs), road closures, etc., and the Field Manager considers the data to be of acceptable quality, then the changes should be evaluated. The evaluation may be done jointly by BLM and the cooperators. As a minimum, interested publics as defined in the regulations (43 CFR 4100.0-5), affected permittees, and the State of Wyoming must be consulted prior to implementing management changes on an area, and the NEPA requirements including public notification must be met.

If an agreement is not developed beforehand, the Field Manager may decide whether any data collected by outside sources will be used in allotment or management area evaluations. If you have any questions, please call Don Glenn at 307-775-6097 or Tom Enright at 307-775-6329.

s/Alan L. Kesterke

MONITORING PLANS

(Taken from Section 7, Planning for Monitoring, TR 4400-1, 1984, and modified where needed)

Monitoring plans are prepared to provide for the orderly and periodic collection of study data needed to make management decisions, determine the effectiveness of on-the-ground management actions, and evaluate progress toward meeting management objectives. Monitoring plans should provide for proper stratification, correct implementation of selected study methods, adequate sampling, and logical analysis, interpretation, and evaluation of data. The rationale/justification for selecting the particular course of action with respect to these items should be documented in the plans. These plans should be prepared in careful and considered consultation with all affected parties and interests both within and outside the BLM.

1. Identifying Areas to be Covered by Monitoring Plans: The authorized officer should determine the most appropriate area to be covered by a monitoring plan. This area may be the area covered by a resource management plan/environmental impact statement, a coordinated resource management plan, an activity plan, or other area, as specified.
2. Essential Components of Monitoring Plans: The basic components of a monitoring plan are:
 - What data needs to be collected.
 - How the data will be collected.
 - Why the specific sampling methods were selected to collect the data.
 - Where studies will generally be located.
 - Where data will be filed and stored.
 - When studies will be established, read, and evaluated (schedules).
 - Who (which position) has responsibility for collecting data, providing training, providing quality control, evaluating studies and other data, and administering the monitoring program to see that it is carried out as planned. The plan should identify non-BLM people who may have accepted responsibilities relative to the monitoring plan.
3. Preparing Monitoring Plans: The following guidance can be used in preparing monitoring plans which will encourage an orderly and comprehensive approach to resource monitoring. While this guidance is not intended to be all inclusive, it covers many of the essential elements that should be considered in preparing monitoring plans. If any of the

elements are described elsewhere, such as in land-use, coordinated resource management, and activity plans or other documents, cross reference the appropriate document; do not duplicate information available in other documents. The plans should be tailored to fit the needs of the areas covered by the plans.

a. Interdisciplinary, Public, and Other Coordination: Measures should be taken to encourage appropriate interdisciplinary participation in the preparation of monitoring plans; general public, academic, extension service, and user involvement; inter Field Office/State coordination. (Refer to Planning for Monitoring, TR 4400-1, Sections 2.2 through 2.4.) Monitoring plans should explain both the coordination that has occurred and the coordination that is planned for the future.

b. Description of Area Covered by Plan: The area covered by a monitoring plan should be briefly described. The description should include general geographical, physical, and biotic characteristics of the area.

c. Management Objectives and Monitoring Priority:

(1) Management Objectives: Management objectives are planned results for allotments, wildlife habitat areas, herd management areas, watershed areas, or other designated management areas. Objectives should relate to resource attributes (e.g., indicators of rangeland health) that can be monitored and that are sensitive indicators of change. Objectives should:

- be simple and understandable.
- be measurable and quantifiable.
- be realistic.
- have time periods for completion.

(a) Management objectives may be of a general nature until the initial data have been collected, after which, the objectives may be refined. Objectives may need to be modified from time to time based on the accession of data which supplement previously existing data.

(b) Management objectives are categorized as short-term objectives or long-term objectives. In particular, objectives relating to utilization tend to

be short-term in nature, while objectives relating to trend in ecological status or resource value rating tend to be long-term.

(2) Monitoring Priority: A priority concerning monitoring needs should be assigned to each allotment, wildlife habitat area, herd management area, watershed area, or other designated management areas. Where planning was completed without assigning management priorities among allotments or groups of allotments under the selective management approach, categorizing allotments (maintain, improve, custodial) when monitoring plans are prepared may help to establish the priority for monitoring on an allotment basis. (Refer to Section 3. Planning for Monitoring, TR 4400-1)

d. Study Methods to be Used.

(1) Existing Studies: Study methods used for previously established studies should be described in detail, or a reference should be made to an existing description in a technical reference or publication, another monitoring plan, or other document. If reference is made to an existing description, any variations from that description should be explained.

(a) Ground Rules: Any "ground rules" unique to the area covered by a monitoring plan should be explained. These "ground rules" may address such things as: differentiating between dead and live portions of sod-forming plants, determining what constitutes a plant for rhizomatous and sod-forming plants, and how annuals will be considered in the studies.

(b) Continuing Existing Studies: The monitoring plan should include a brief explanation of how data collected with existing study methods will or will not satisfy identified monitoring needs. The rationale/ justification for continuing to use existing study methods should be documented. (Refer to Section 5.2., Planning for Monitoring, TR 4400-1).

(c) Discontinuing Existing Studies. Rationale for discontinuing existing studies should be included in the monitoring plan. (Refer to Section 5.3., Planning for Monitoring, TR 4400-1).

(d) Retaining Data from Discontinued Studies. Provisions to retain data from discontinued studies should be explained. (Refer to Section 6., Planning for Monitoring, TR 4400-1)

(2) New Studies. Study methods that will be used for new studies should be described in detail, or a reference should be made to an existing description in a technical reference or publication, another monitoring plan, or other document. If

reference is made to an existing description, any variations from that description should be explained. Specific details that may be described are: minimum number of samples, size of frame(s), interval between samples, and how many plants will be sampled for utilization. Explain the "ground rules" as they apply to the study methods. (See Section 7.34a(l) above.) Rationale/justification for using the selected study methods should be documented. (Refer to Section 5.2., Planning for Monitoring, TR 4400-1)

e. Studies Location and Data:

(1) Studies by Management Area: All studies which will be conducted on each allotment, wildlife habitat area, herd management area, watershed area, or other designated management area should be listed. The amount of detail necessary will vary from area to area. In some cases a brief list of studies may suffice, while in other cases, descriptions of study locations may be necessary. Where appropriate, any statistical considerations such as number of samples and desired confidence levels should be described. (Refer to Section 5.4., Planning for Monitoring, TR 4400-1)

(2) Study Sites: Any special or unique criteria that will be used in the selection of key areas and/or key species or indicators of rangeland health should be explained. Rationale/justification for selecting study sites should be documented. In some cases, consideration may be given to locating study sites where studies will provide data concerning the effects of continuing the existing management actions as well as the effects of newly implemented or future management actions.

(3) Data Records and Storage: The plan should explain how and where data are to be recorded, filed, and stored. It should discuss any computer capability that may be used. The disposition of field data forms and provisions for permanent storage of data should be documented.

(4) Marking Study Site Locations: Every effort should be made to establish uniformity in marking study locations in the field and in documenting study locations in the office. Locating established study sites is often very time consuming and good location documentation can greatly decrease the time spent in this effort.

(5) Photographic Records: The plan should describe the extent to which photographs will be used, taking into consideration such items as prints vs. slides, color vs. black and white film, close-up and general view photographs, and the direction from which photographs should be taken. It should explain how photographs will be stored as part of the permanent monitoring records. (Refer to Section 6., Planning for Monitoring, TR 4400-1)

f. Studies Schedule:

(1) Establishing and Reading Studies: A study schedule should specify when the studies are to be established and read. The monitoring plan should identify the positions responsible for these tasks. The plan should also identify parties outside the BLM who have accepted responsibility for collecting studies data.

(2) Priority for Conducting Studies: Where unforeseen circumstances prevent completion of planned work, refer to the priority list in the monitoring plan. This list indicates the order in which studies should be completed by allotment, wildlife habitat area, herd management area, watershed area, or other designated management area. In situations where all the work cannot be completed, the studies that are established and/or read, should be done to the standard called for in the monitoring plan. It is not advisable to try to complete all the scheduled work, if part or all of it has to be done below standard.

(3) Progress Reporting: Study schedules can be used as records of accomplished and unfinished work. Schedules can prevent some studies from being inadvertently overlooked.

(4) Workload: Studies schedules reflect the monitoring program workload for Field Offices and are useful in preparing annual work plans. These schedules, along with other elements in monitoring plans, are valuable in preparing requests for the funding and personnel needed to accomplish the desired level of monitoring.

g. Analysis, Interpretation, and Evaluation: The monitoring plan should include a discussion of data analysis, interpretation, evaluation, and should identify any computer programs or programs for programmable calculators that will be used. The plan should describe other data that may be used in the evaluation, including data collected by non-BLM parties (See Appendix B attached). Provisions may also be made for any desired peer review of the analysis, interpretation, and evaluation. The plan may identify the format to be used for presenting results of interpretation and evaluation. An explanation of how wildlife, watershed, and other resource data will be incorporated into an evaluation should be included in the plan.

h. Training for Monitoring: The monitoring plan should specify what type, how much, when, and by whom training will be provided. Provisions should be made for training new personnel as well as providing refresher and recalibration sessions for previously trained personnel. (Refer to Section 4., Planning for Monitoring, TR 4400-1). If parties outside BLM are responsible for collecting study data, they should receive appropriate training by BLM.